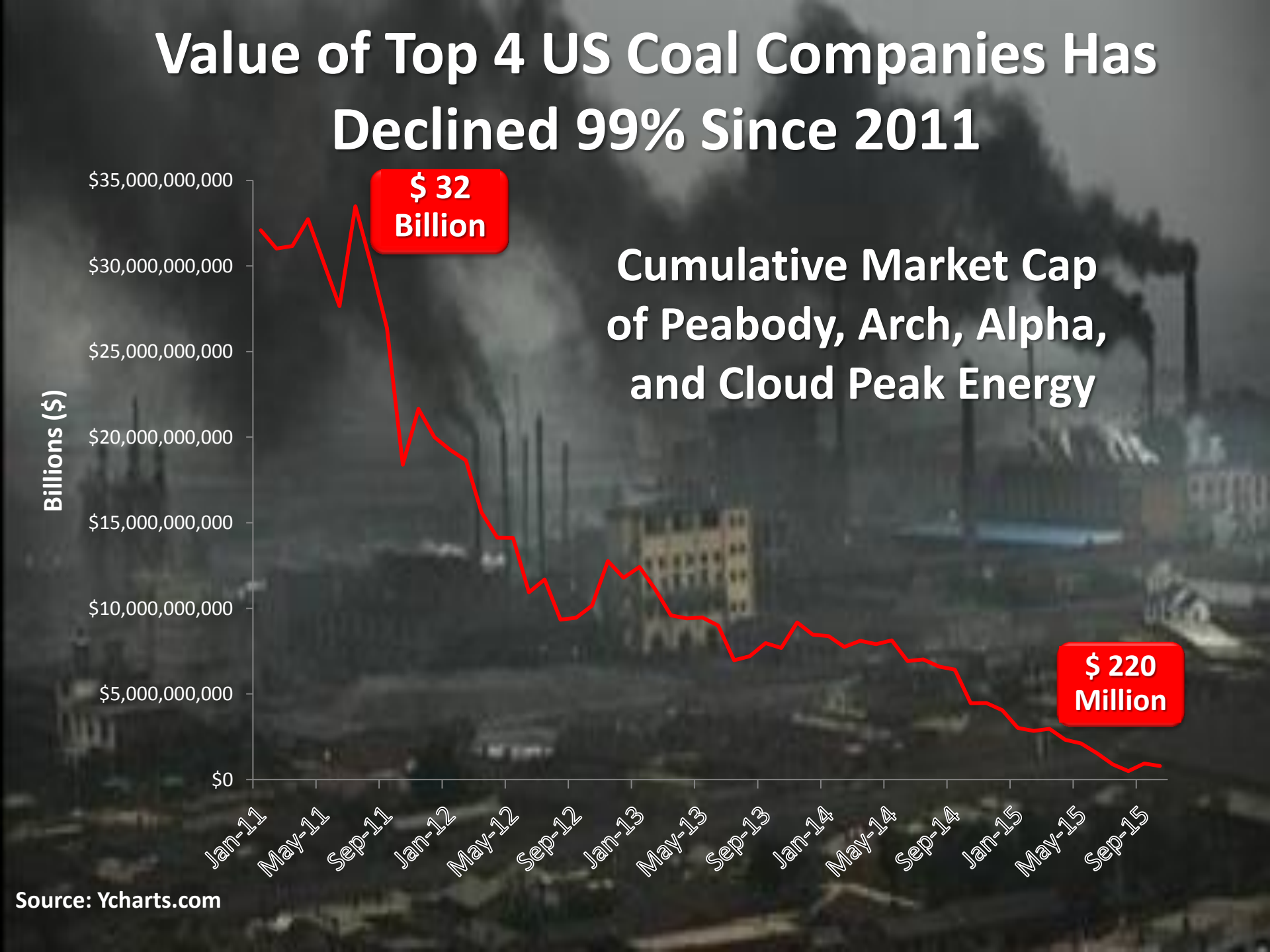
SUNRISE FROM THE WEST: THE DAWN OF THE CLEAN ENERGY ERA

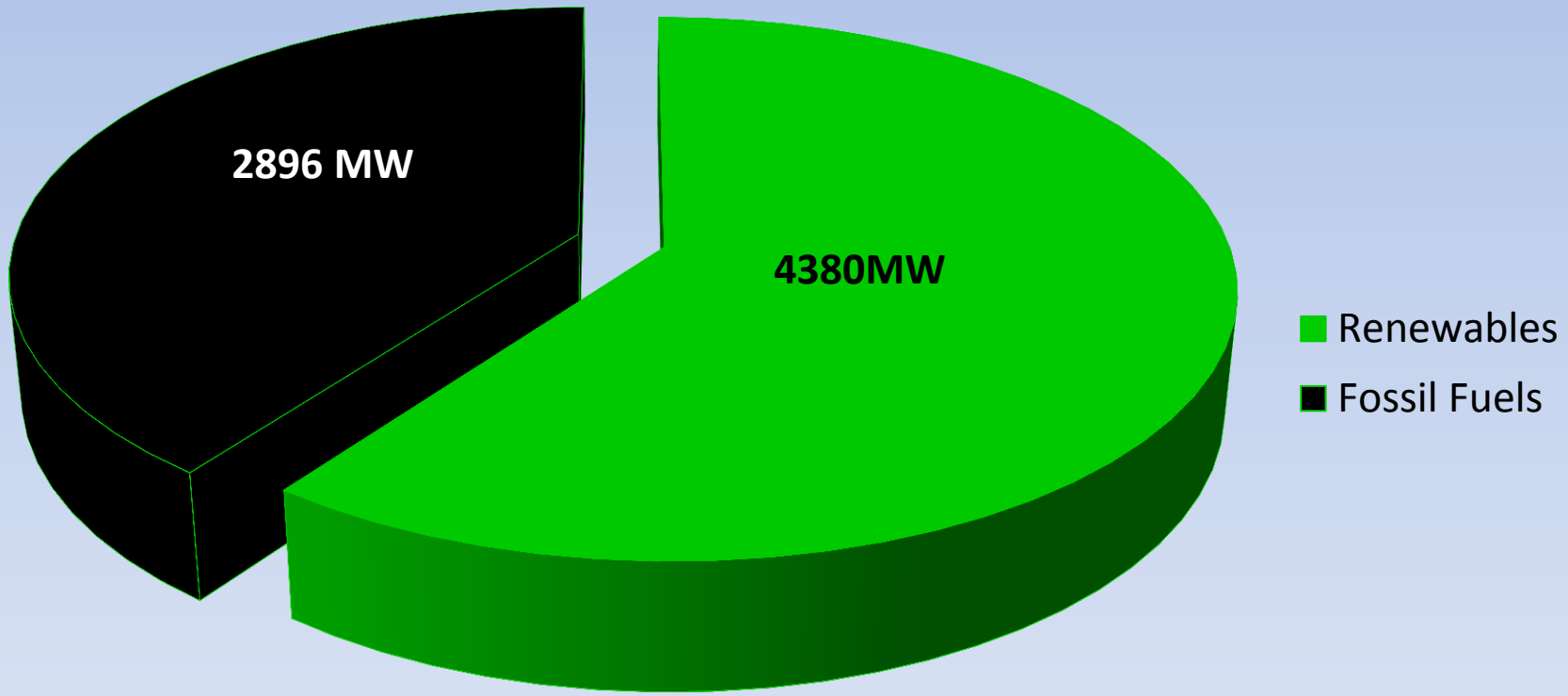
David Hochschild
Commissioner
California Energy Commission

Value of Top 4 US Coal Companies Has Declined 99% Since 2011



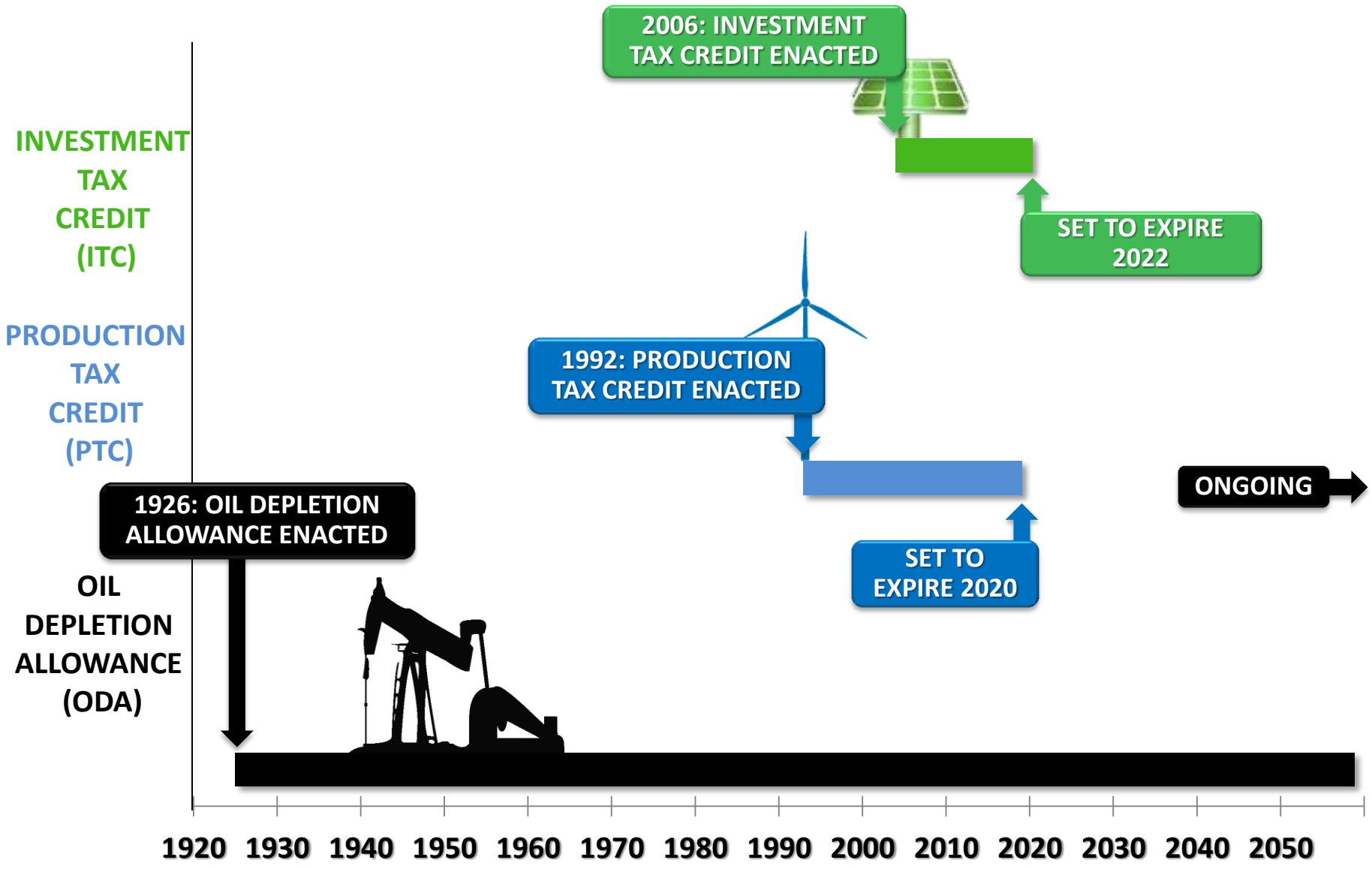
Source: Ycharts.com

Renewable Energy Represented 60% of New Electric Generation Capacity Additions in the US in 2015

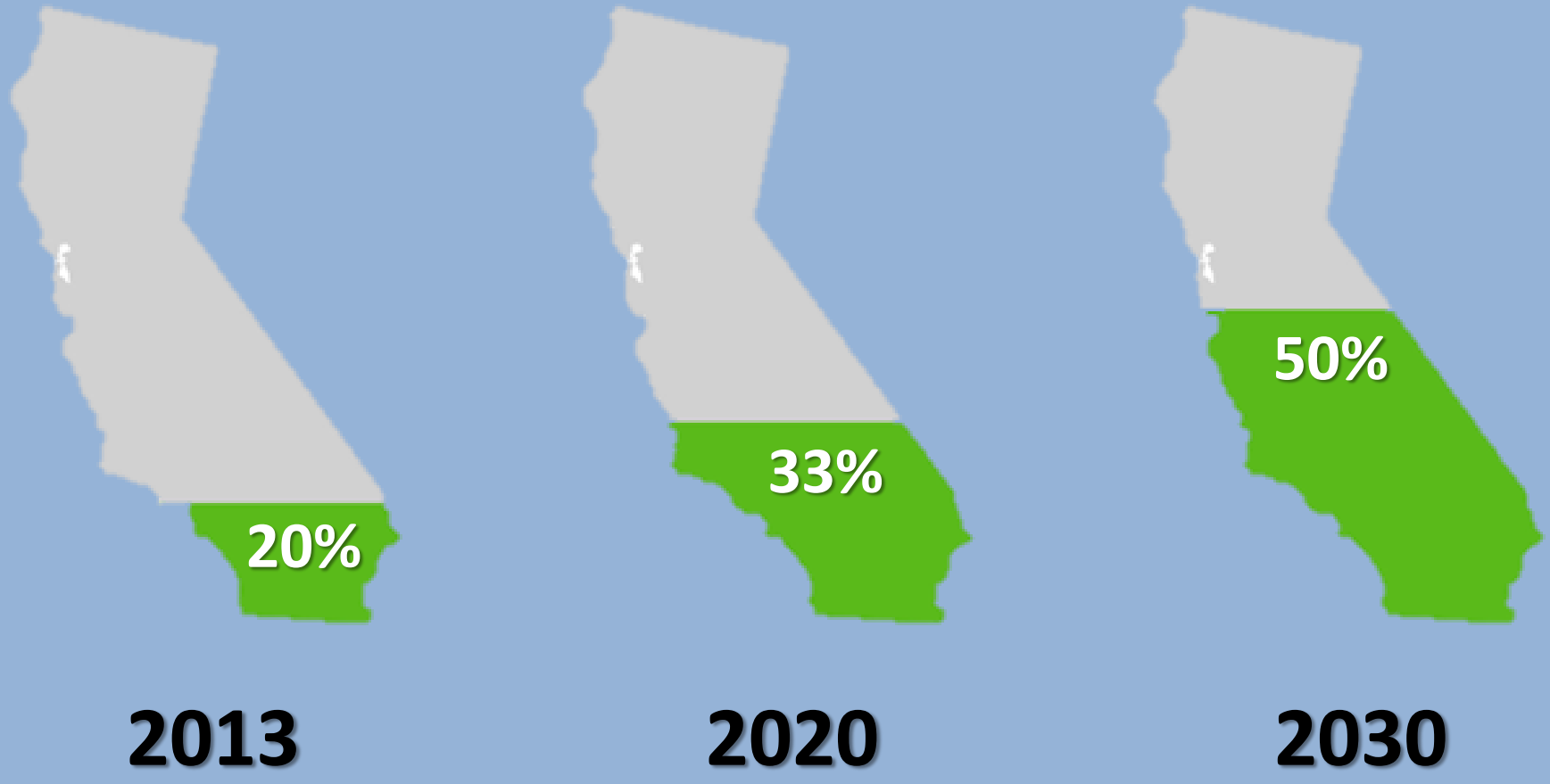


Source: FERC Energy Infrastructure Update, January-September 2015

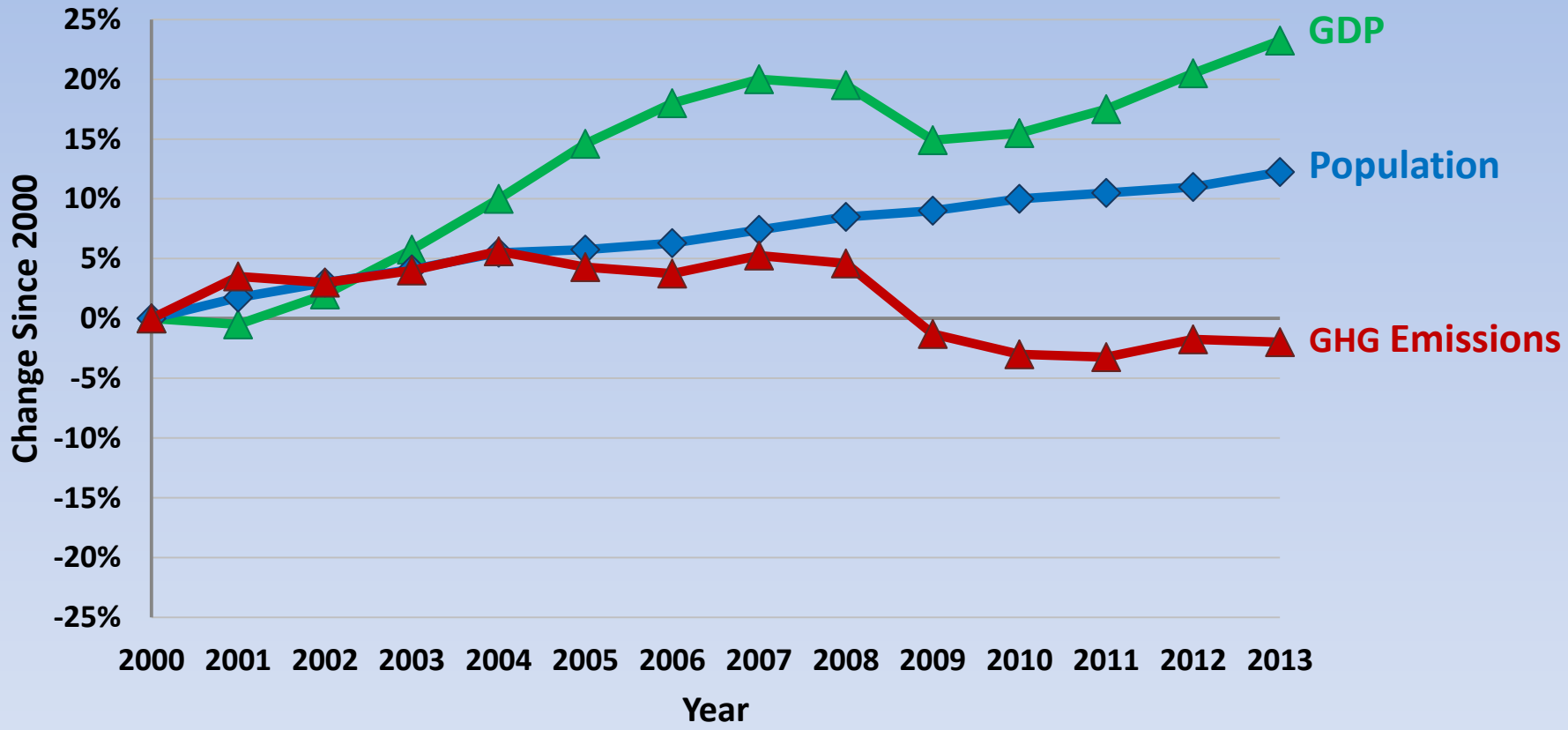
Federal Energy Subsidies



California Moves to 50% Renewables



Change in California GDP, Population and GHG Emissions since 2000

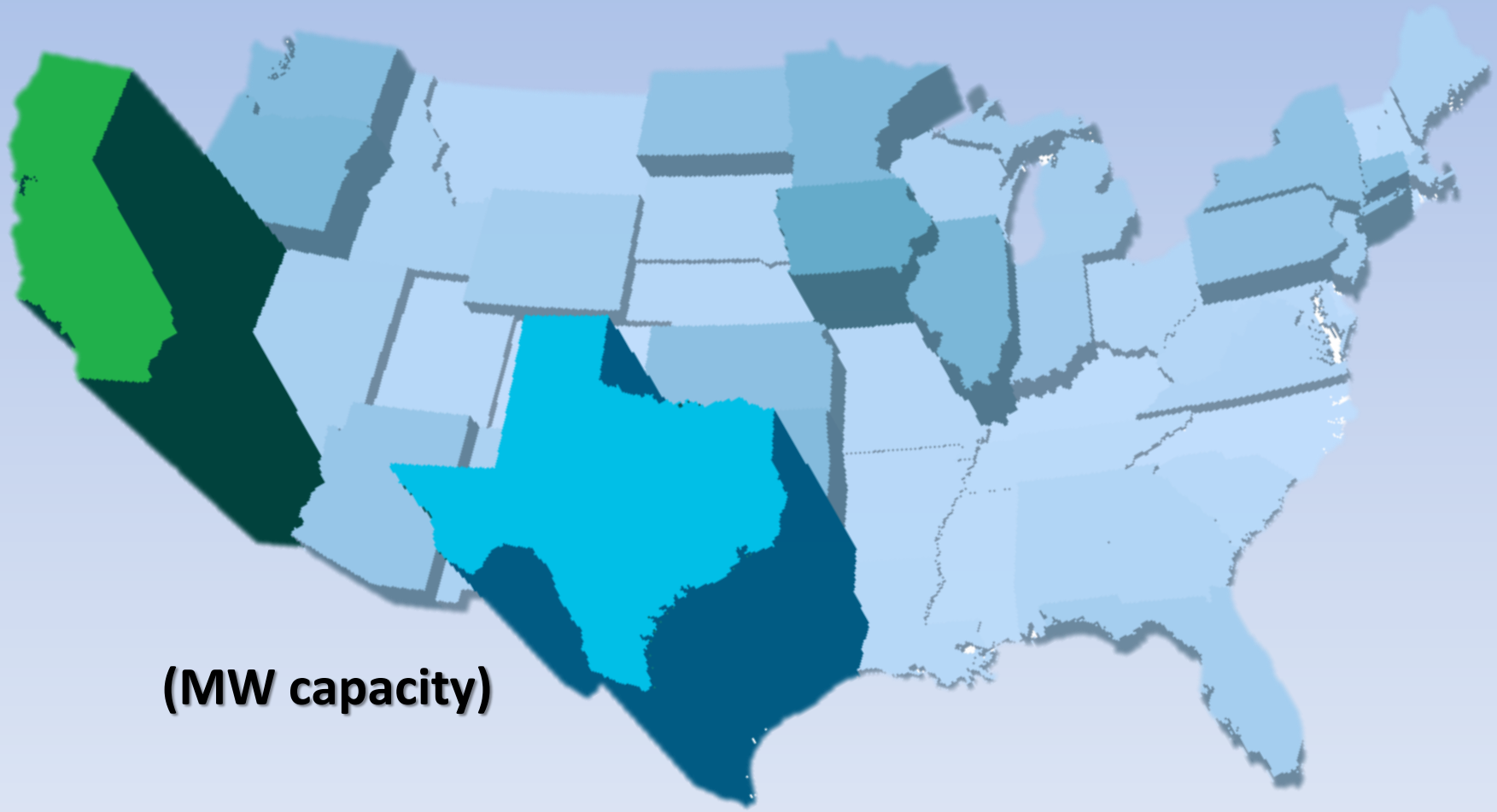


Metric	Associated 2013 Value
GDP	2.05 trillion (2009 $)
Population	38.2 million
GHG Emissions	459.3 $MMTCO_2e$

**Source: CA Air Resources Board*

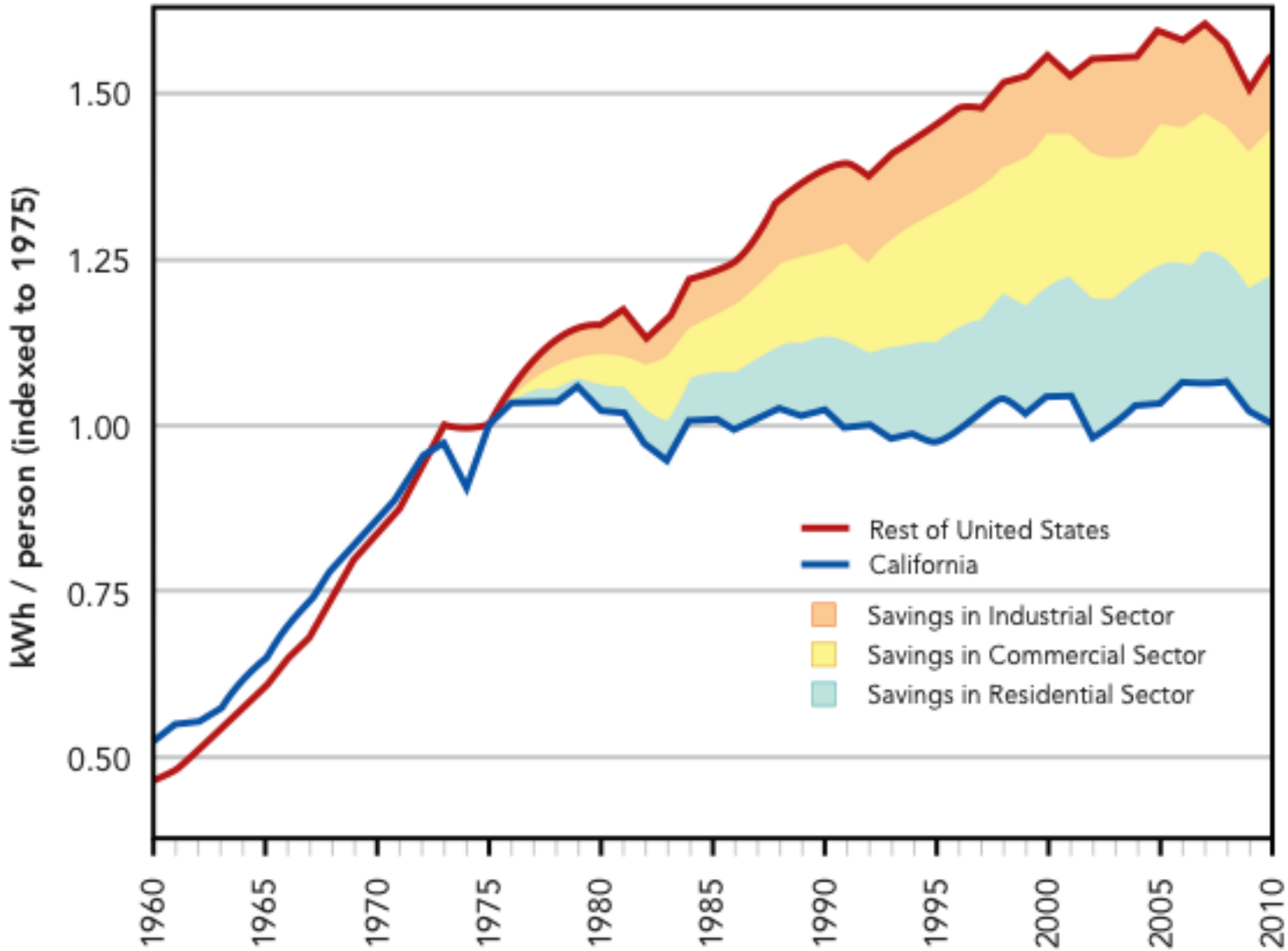
California Leads the US in Renewables Installed.

What Happens in a State With High Penetration of Renewables & Efficiency?

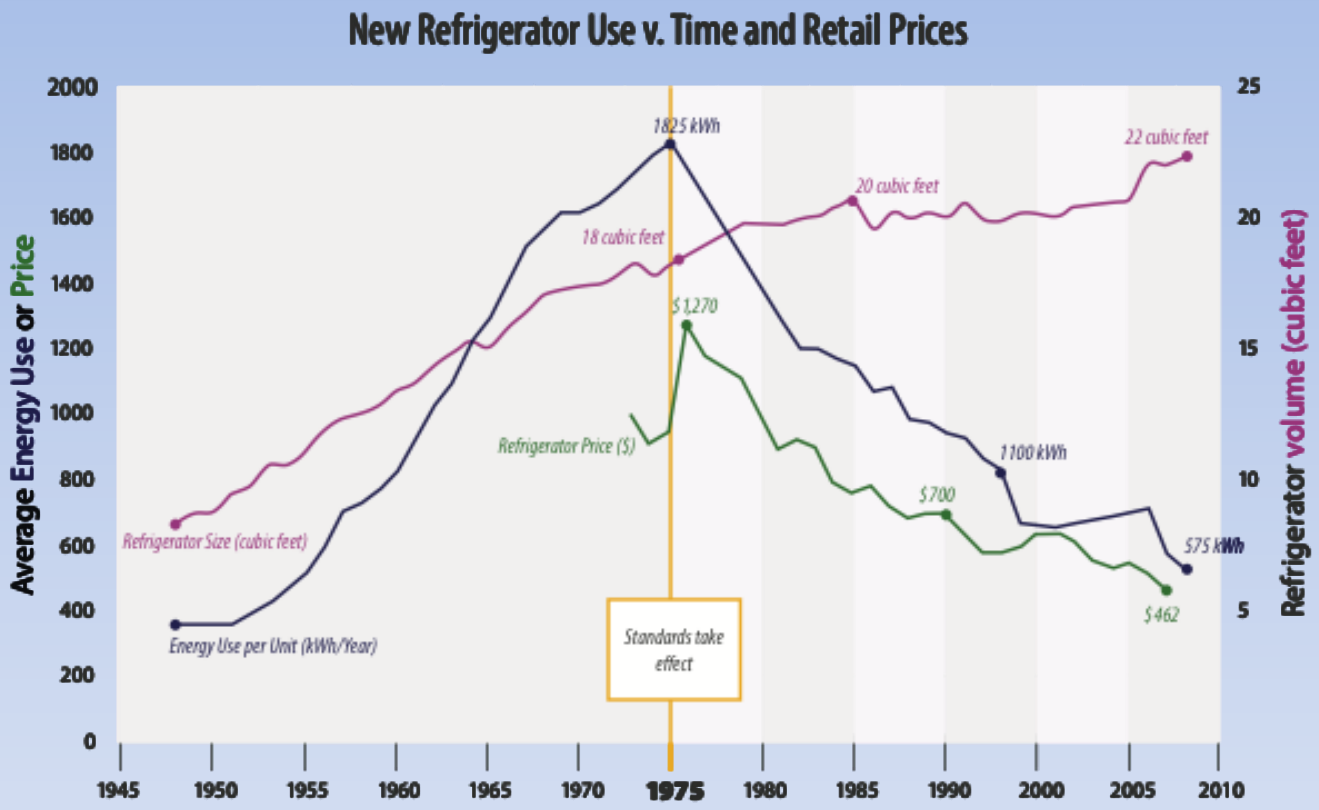


Source: Graphics based on data from the American Council On Renewable Energy (ACORE)
Renewable Energy in the 50 States (2013/2014 Editions)
http://www.acore.org/publications/50states/

California Advancing Energy Efficiency



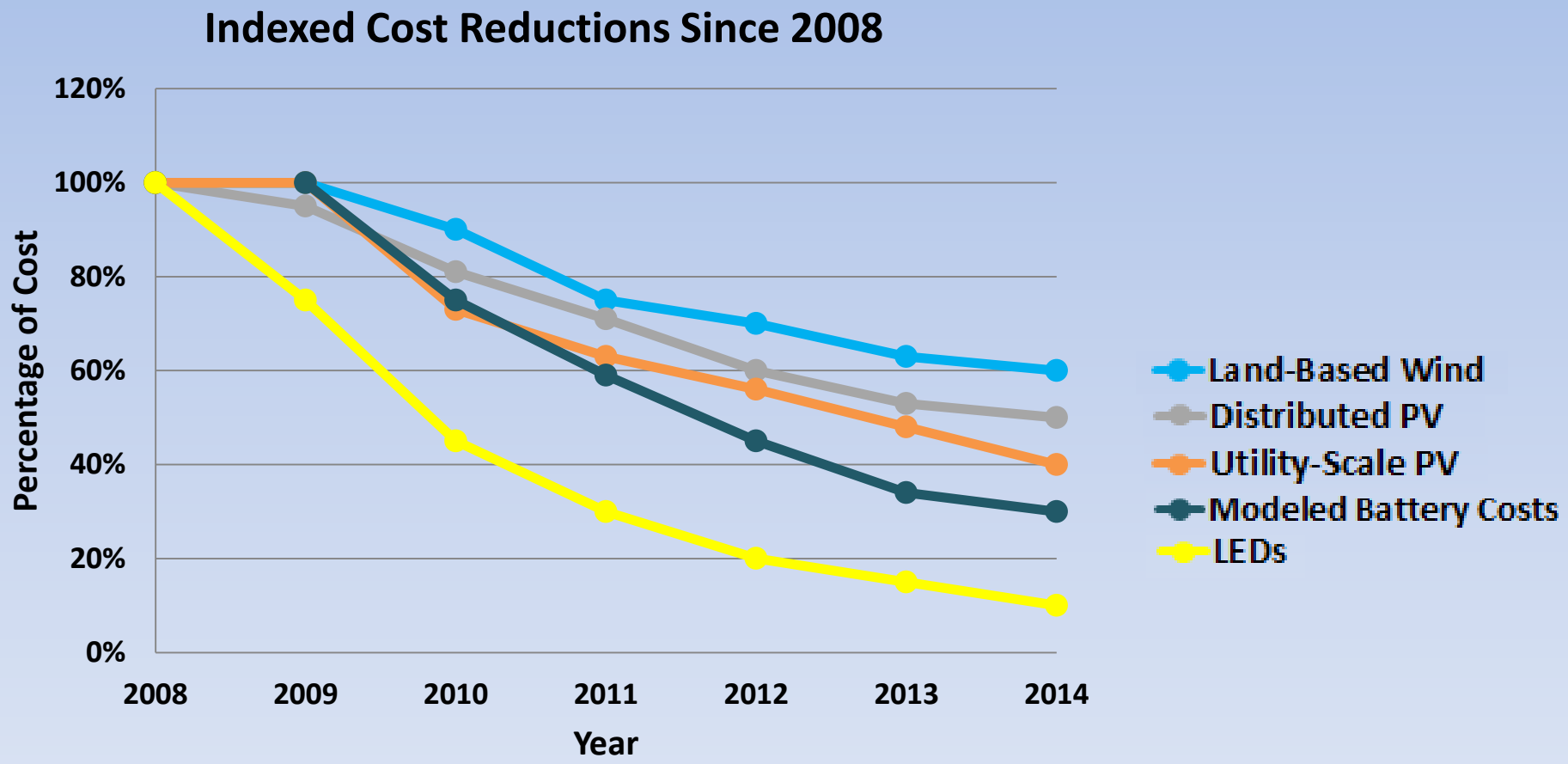
California Advancing Energy Efficiency



2009: The Energy Commission's TV efficiency standards take effect, saving Californians **$1 billion / year**

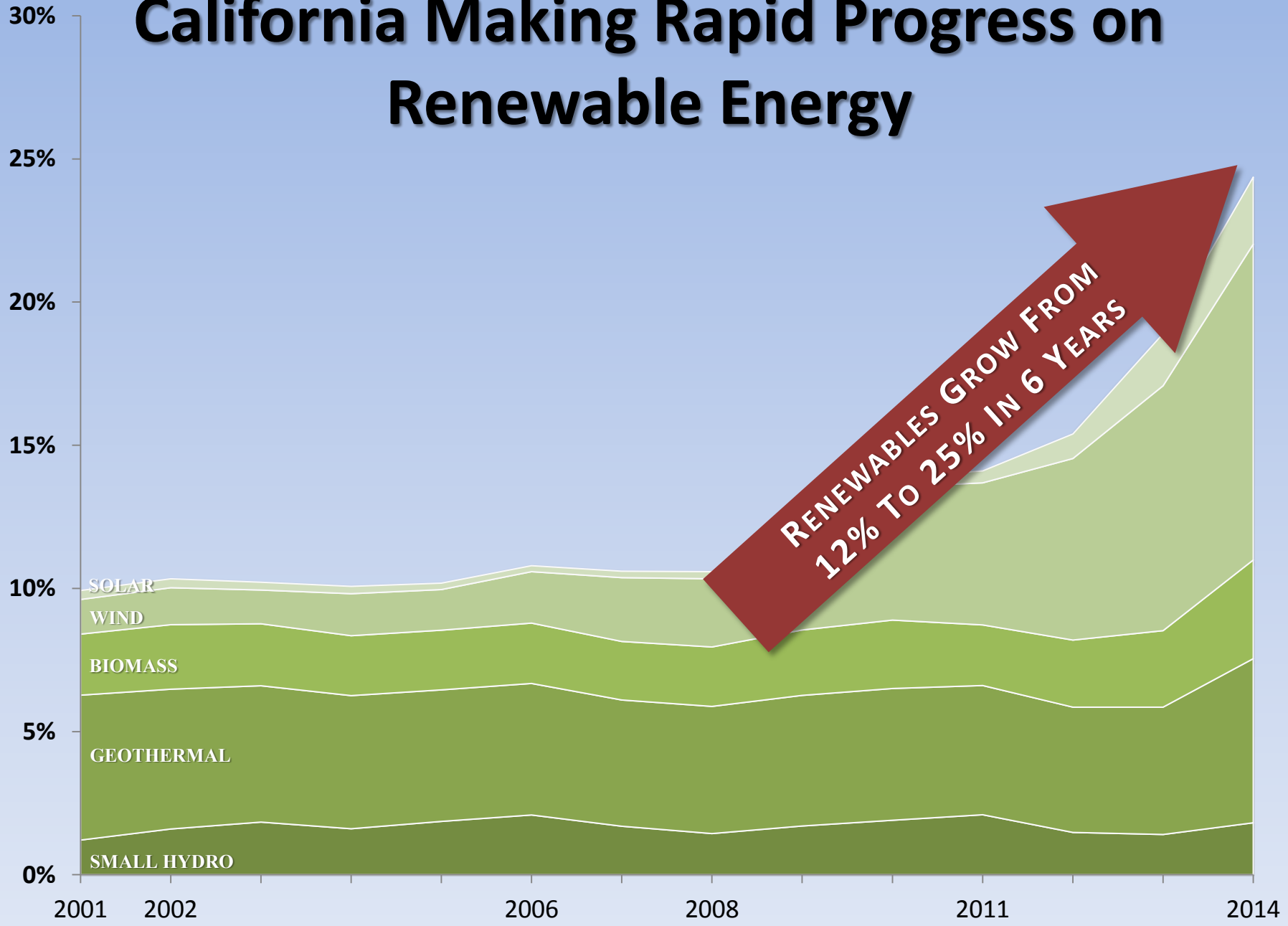
2012: The Commission's plug-in charger efficiency standards begin saving Californians **$300M / year**

The Falling Cost of Clean Energy Technologies



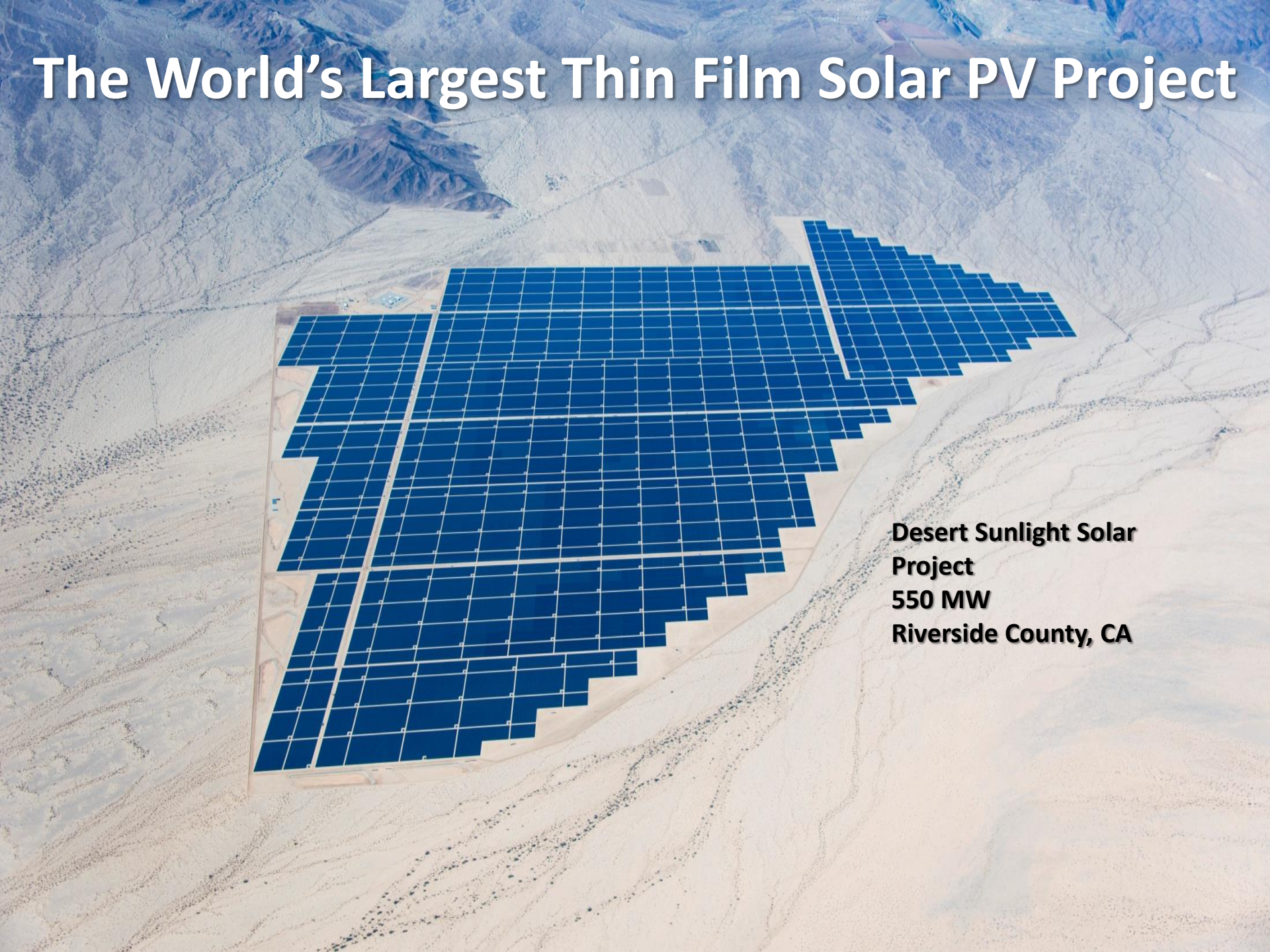
Source: DOE Report, Revolution Now, The Future Arrives for Five Clean Energy Technologies, 2015

California Making Rapid Progress on Renewable Energy



Source: California Energy Commission, Tracking Progress Report

The World's Largest Thin Film Solar PV Project



Desert Sunlight Solar Project
550 MW
Riverside County, CA

The World's 3rd Largest Silicon PV Project

The World's Largest Silicon PV Project: 1.2 GW
Qing Hai Province, Western China

The World's Largest Solar Thermal Power Plant (Tower)

Ivanpah Solar Thermal Project
393 MW
San Bernardino County, CA

The World's Largest Solar Thermal Power Plant (Trough)

Solar Energy Generating System (SEGS)
354 MW
San Bernardino County, CA

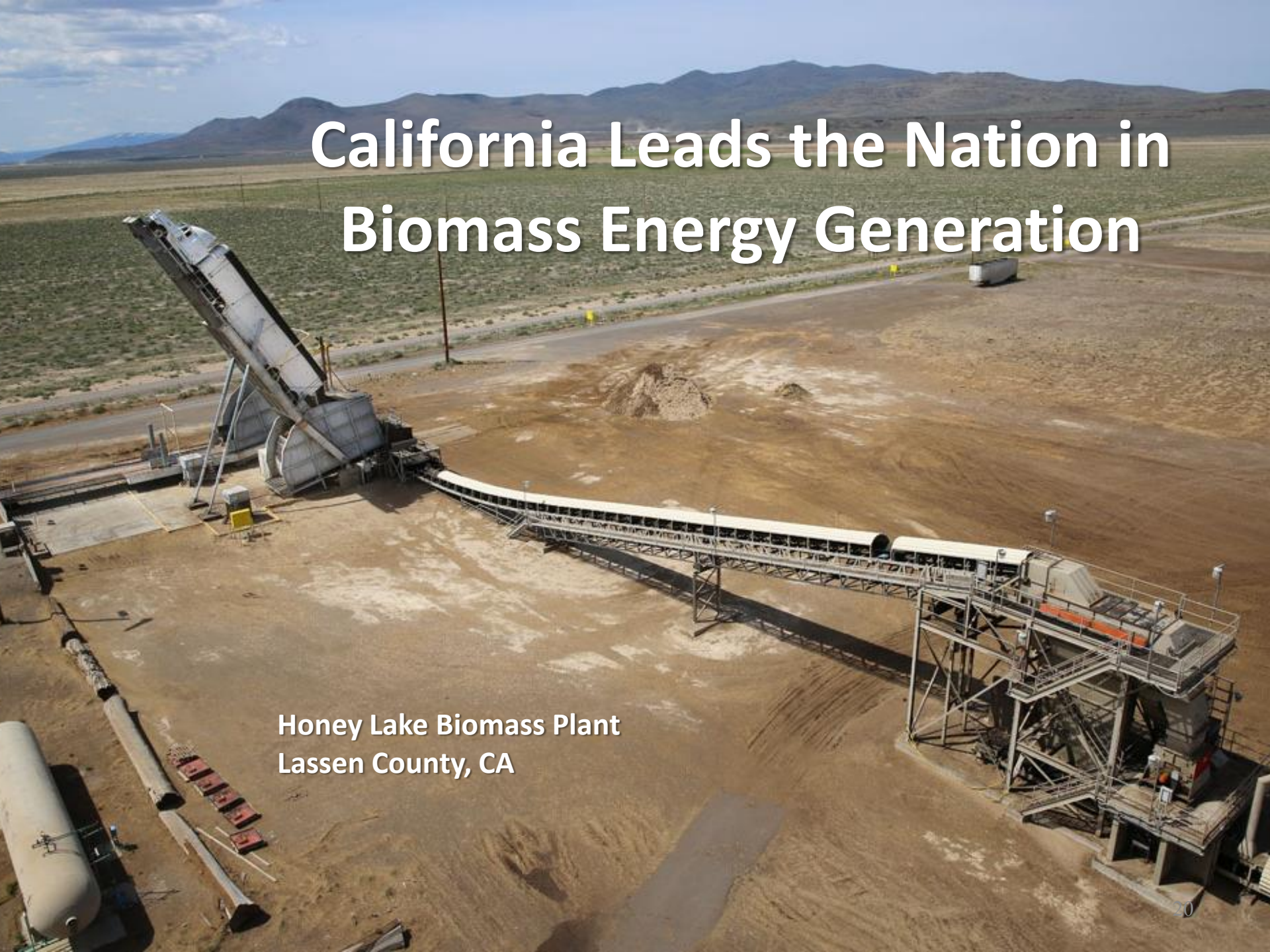
The World's Largest Geothermal Power Plant

Geysers Geothermal Power Plant
955 MW
Lake County, CA

The World's Largest Wind Project

Alta Wind Energy Center
1550 MW
Kern County, CA

California Leads the Nation in Biomass Energy Generation



Honey Lake Biomass Plant
Lassen County, CA

Case Study in Reducing Impacts: Vasco Wind Energy Center Repowering

432 small turbines removed and replaced with 34 new turbines

Vasco Wind Energy Center, 78MW
Contra Costa County

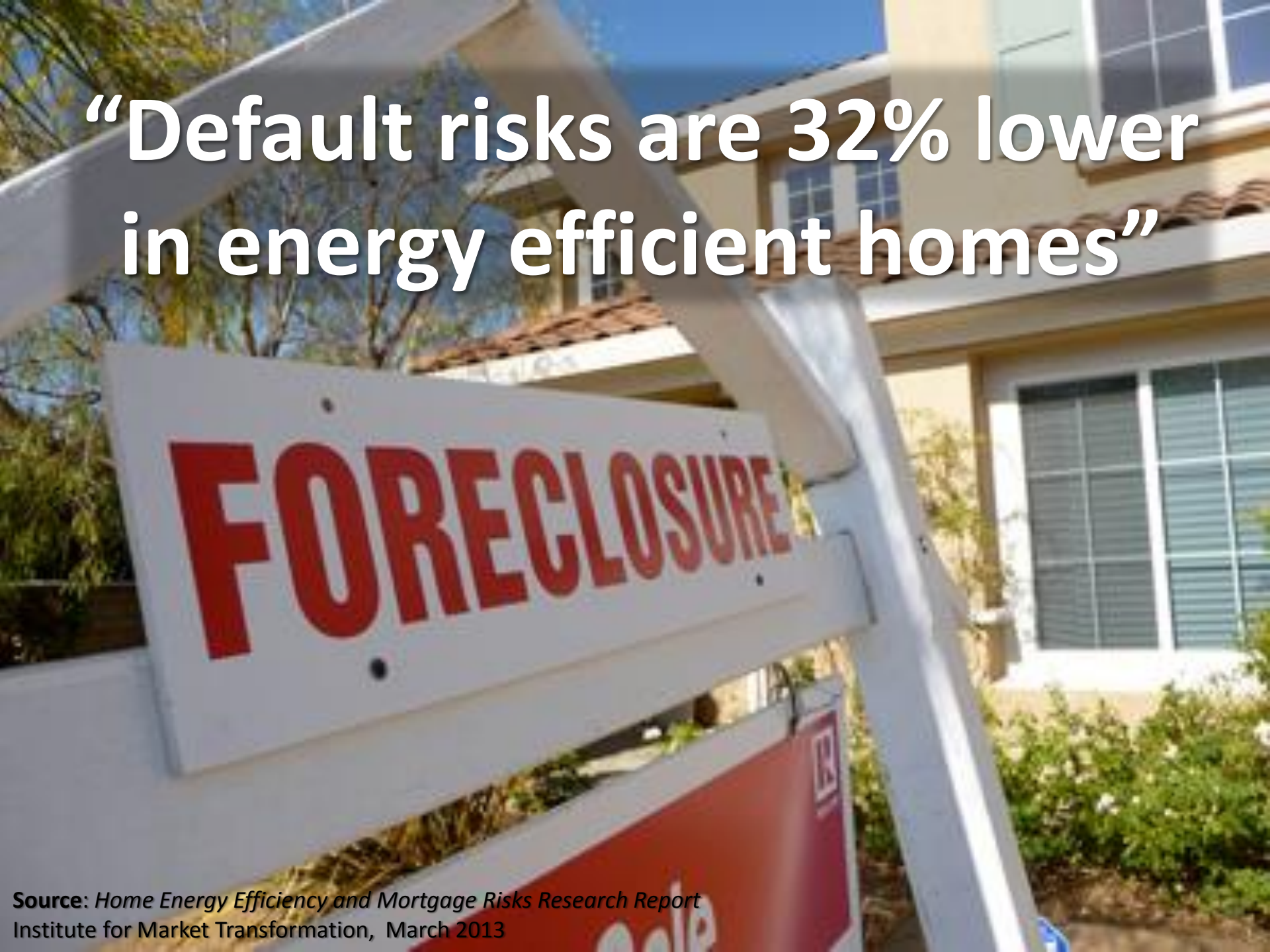
RESULT: Energy production tripled & avian mortality cut by 70%

New Solar Home Construction Growing Rapidly

Zero Energy Community
Rocklin, CA

27% of new homes in Southern CA built with solar

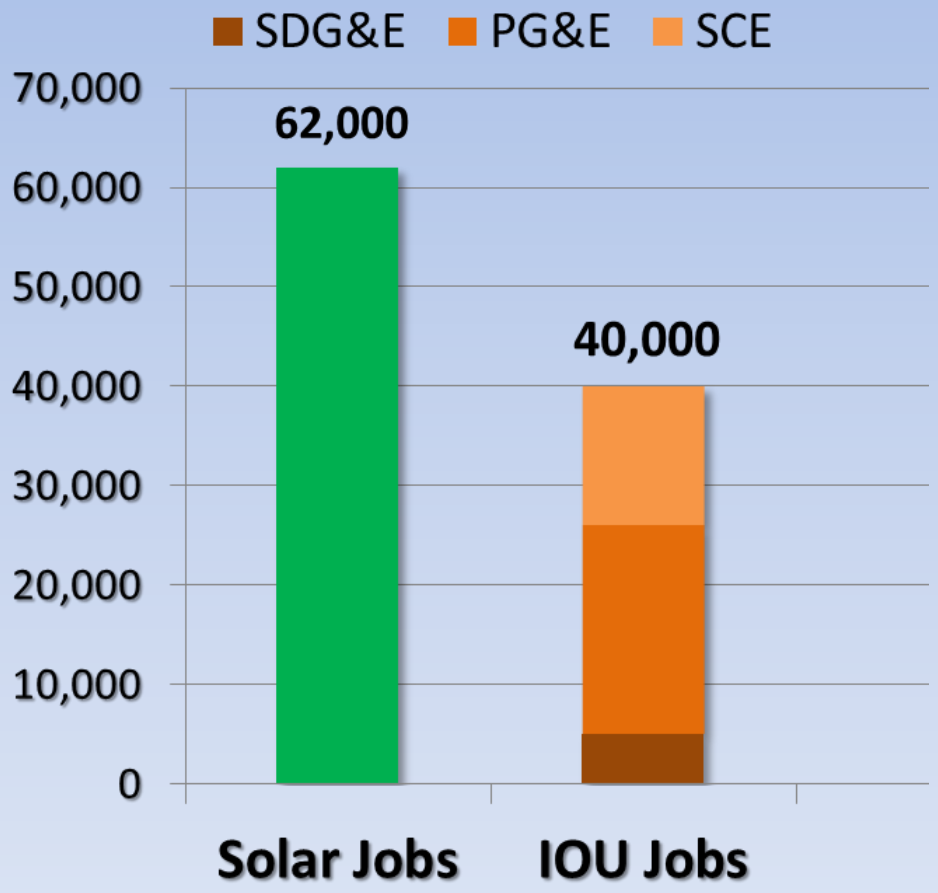

Lancaster, CA: The first city in the US to mandate solar on new construction



"Default risks are 32% lower in energy efficient homes"

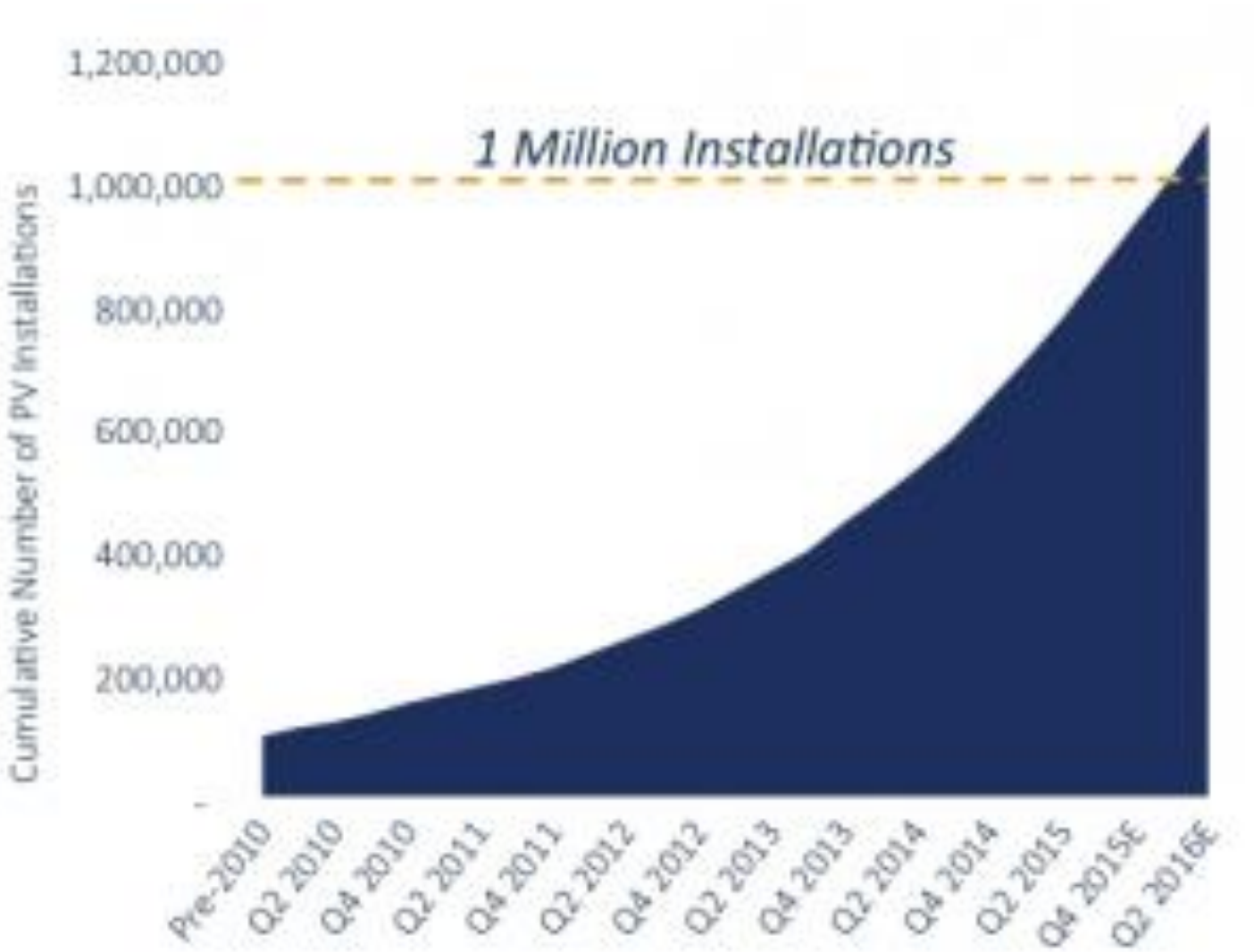
Source: *Home Energy Efficiency and Mortgage Risks Research Report*
Institute for Market Transformation, March 2013

More Solar Jobs in California Than the 3 Investor Owned Utilities Combined



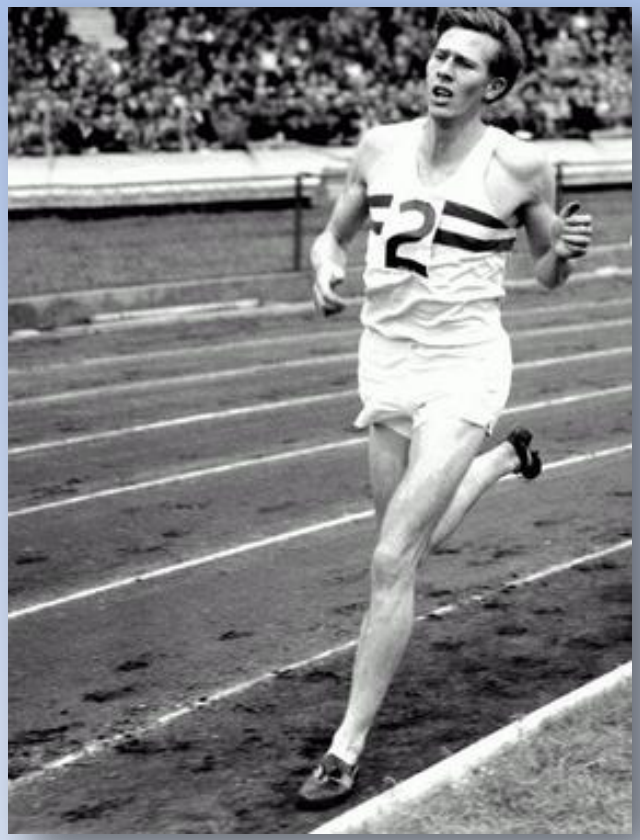
Source: Solar Foundation, 2014 Solar Jobs Census
U.S. Securities and Exchange Commission, Form 10-K, 2014
http://www.sec.gov/edgar/searchedgar/companysearch.html

US Approaches 1 Million PV systems



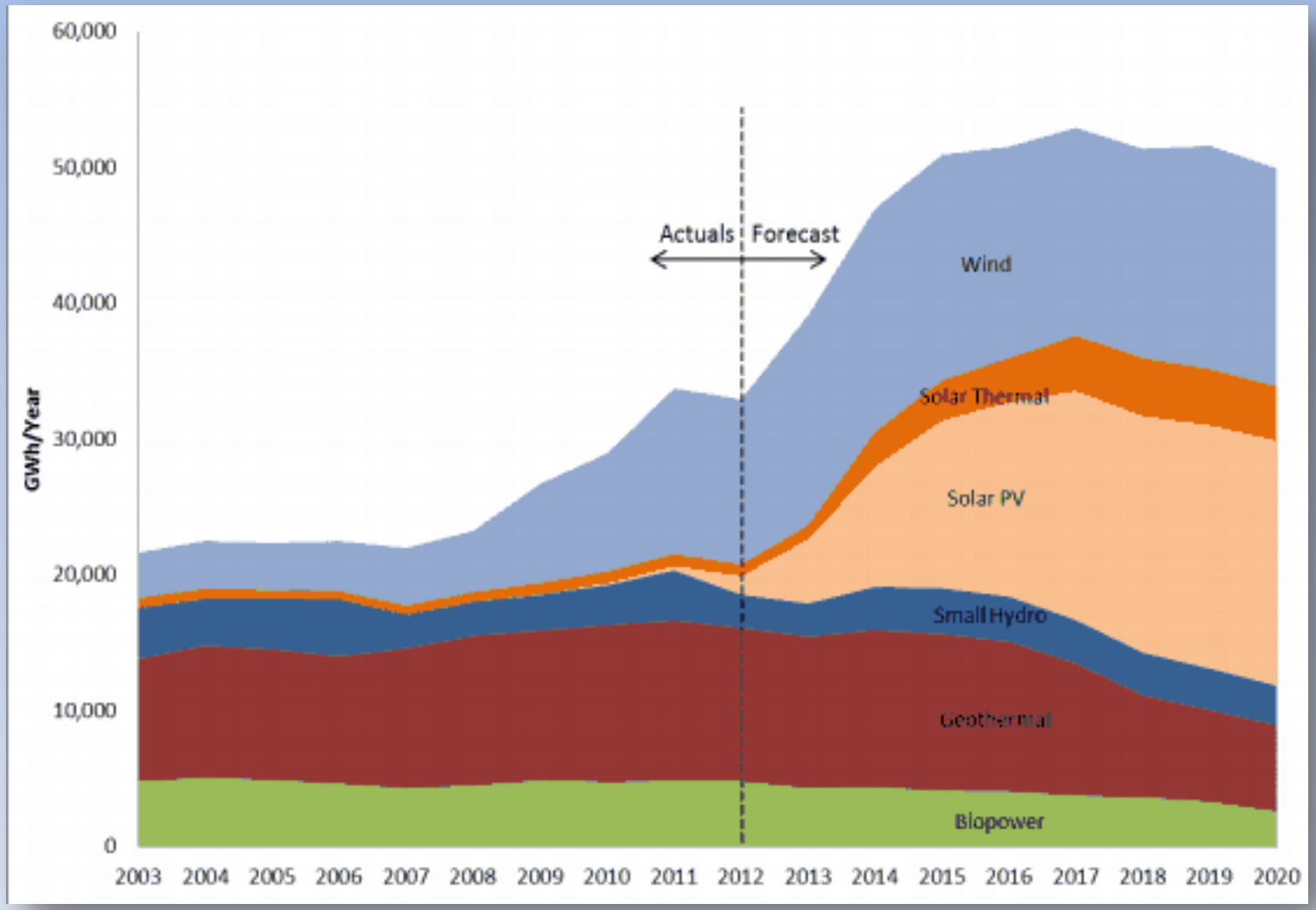
Source: GTM Research/SEIA U.S. Solar Market Insight

May 1954: Roger Bannister Breaks the 4 Minute Mile



June 2015: Solar breaks 4 cents/kwh

Solar Expected to be half of all Renewable Energy in California by 2020



Source: CPUC RPS Report

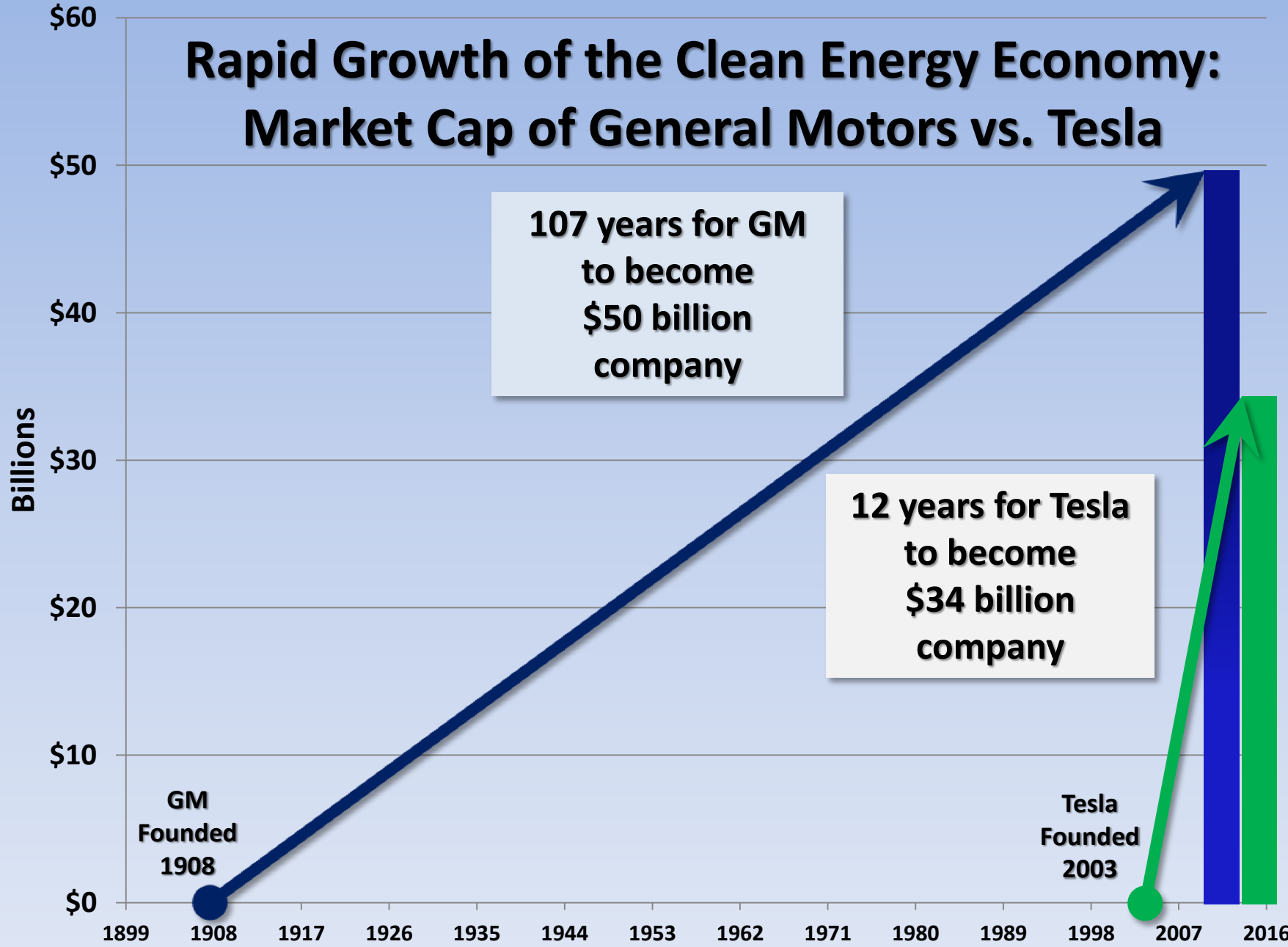
Largest Manufacturing Plant in CA Produces Electric Vehicles

Tesla employs over 12,000 people

Tesla Factory
Fremont, CA

150,000 ELECTRIC VEHICLES IN CALIFORNIA TODAY

Rapid Growth of the Clean Energy Economy: Market Cap of General Motors vs. Tesla



Based on market value as of 8/5/15

Innovation in Electric Vehicles: 100 mile range, recharges in 20 minutes

Proterra Battery Electric Bus

Chevy Bolt (EV) Due Oct 2016
Retail Price: $30,000
Range: 200 miles

Now Selling: The All-Electric Home

CityVentures all-electric homes
Bellflower, CA

Electric bike **Electric motorcycle**

Companies Committing to 100% Renewable Energy

Google

The Latest Solar Customer: Solar Panels on the White House Roof

Governor Brown installs solar on the Governor's Mansion….

Over 30 US military bases in CA Representing approximately $130B annually to the California Economy

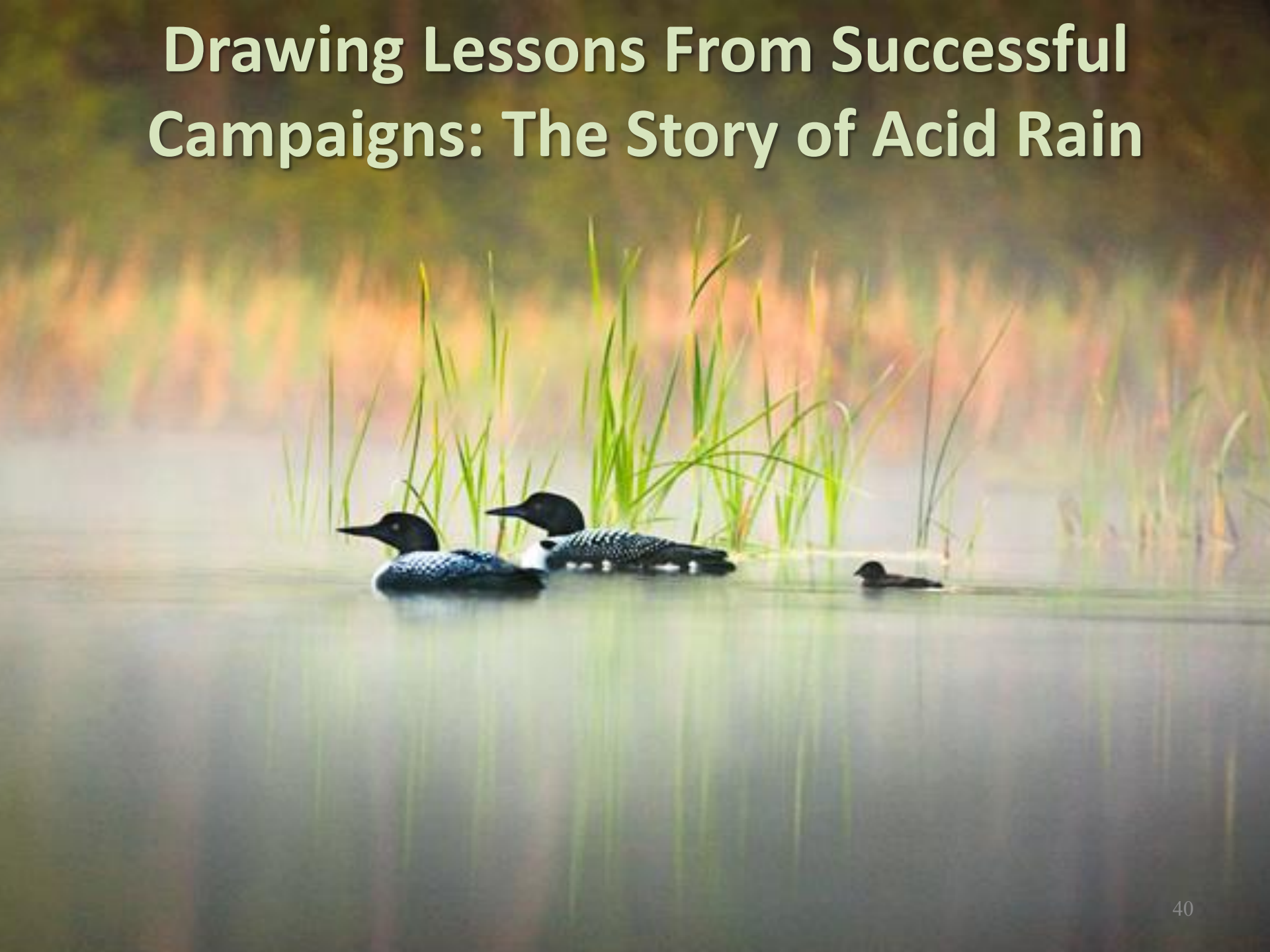
Navy: 50% Renewables by 2020

Marines: Zero Fossil Fuels on Bases by 2025

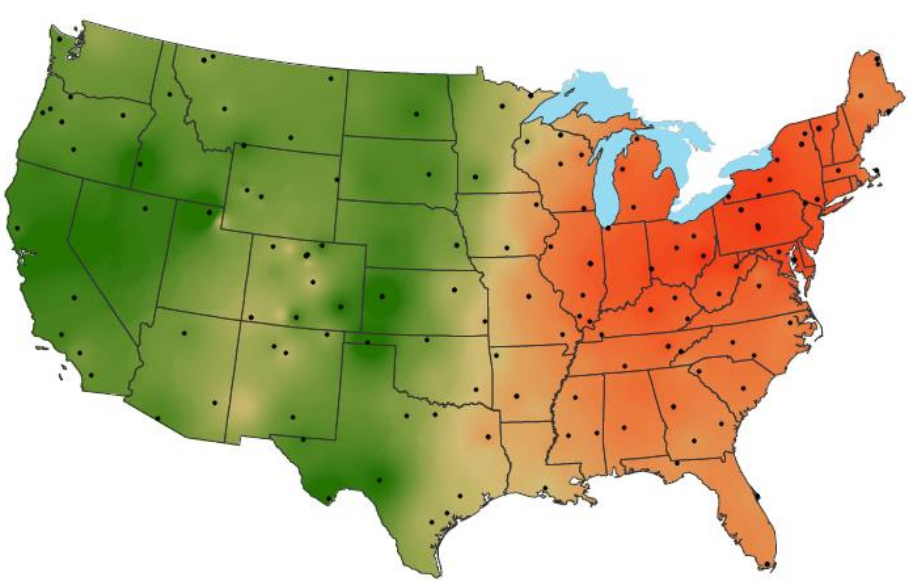
Source: California Energy Commission, 2014 Geographic Information Systems Data

High Speed Rail is Coming to California and it will be 100% Powered by Renewables…

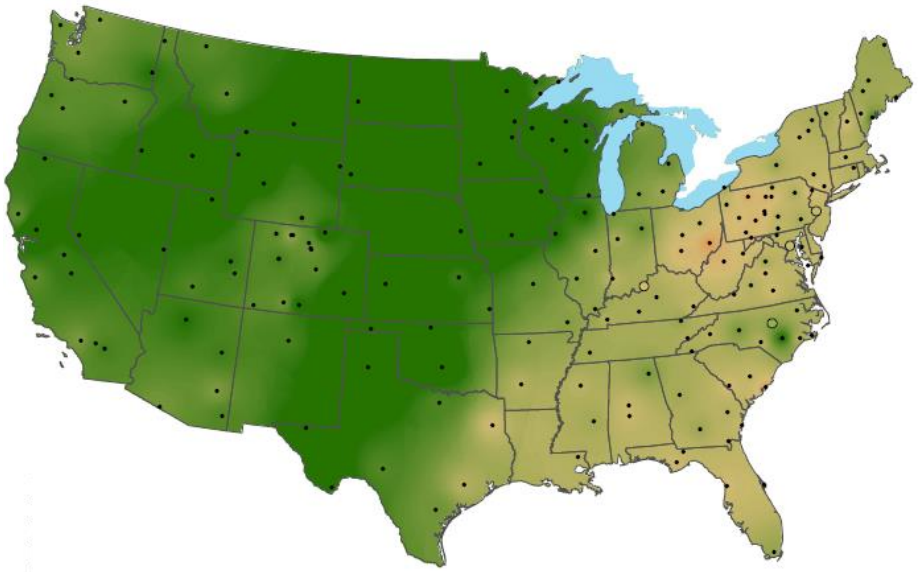
Drawing Lessons From Successful Campaigns: The Story of Acid Rain



Reduction in Acid Rain



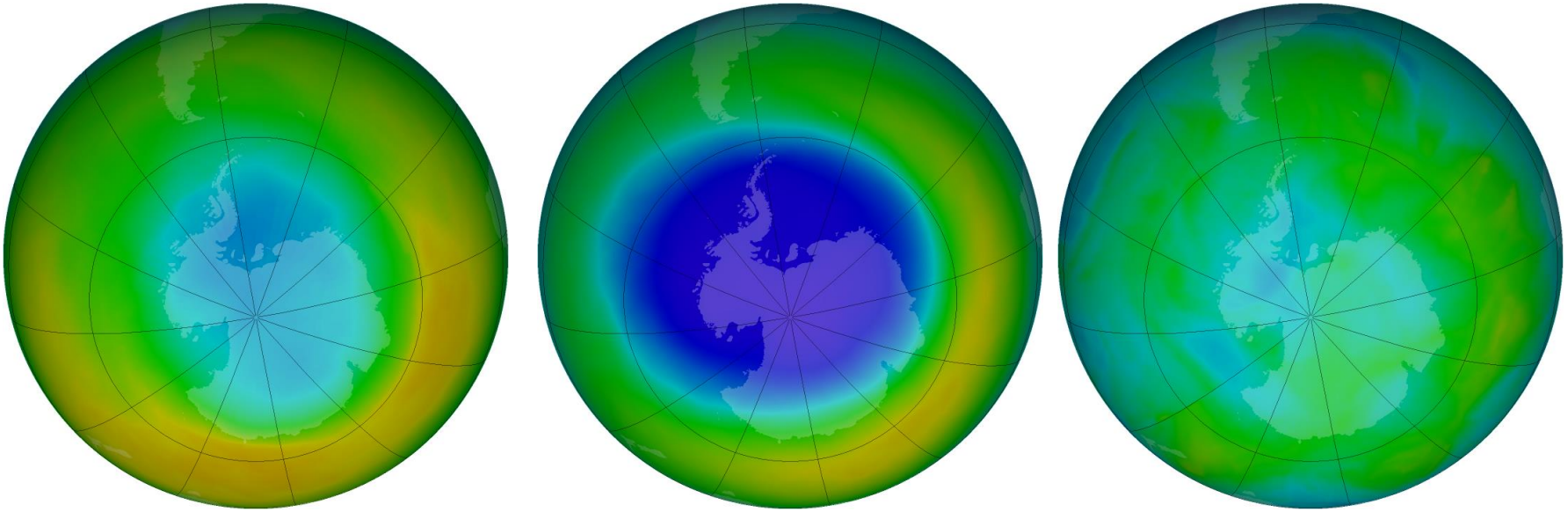
1985



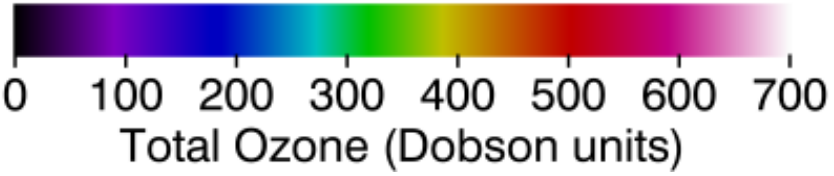
2012

Source: National Atmospheric Deposition Program, 2014
http://nadp.sws.uiuc.edu/ntn/annualmapsByYear.aspx

The Ozone Hole

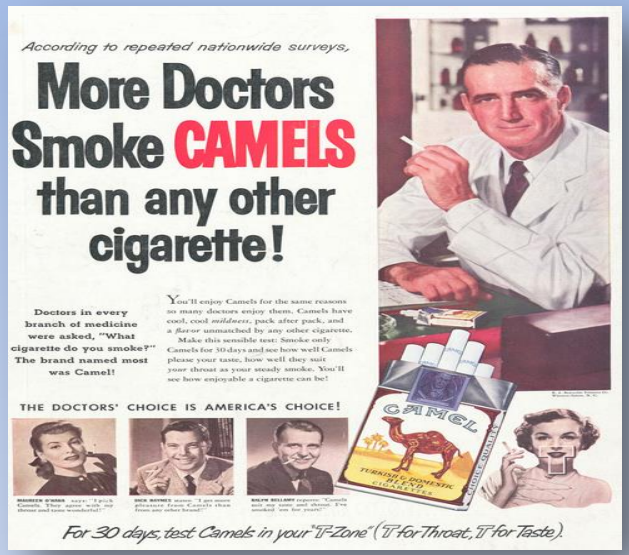


1979 **2013** **2050 (expected)**

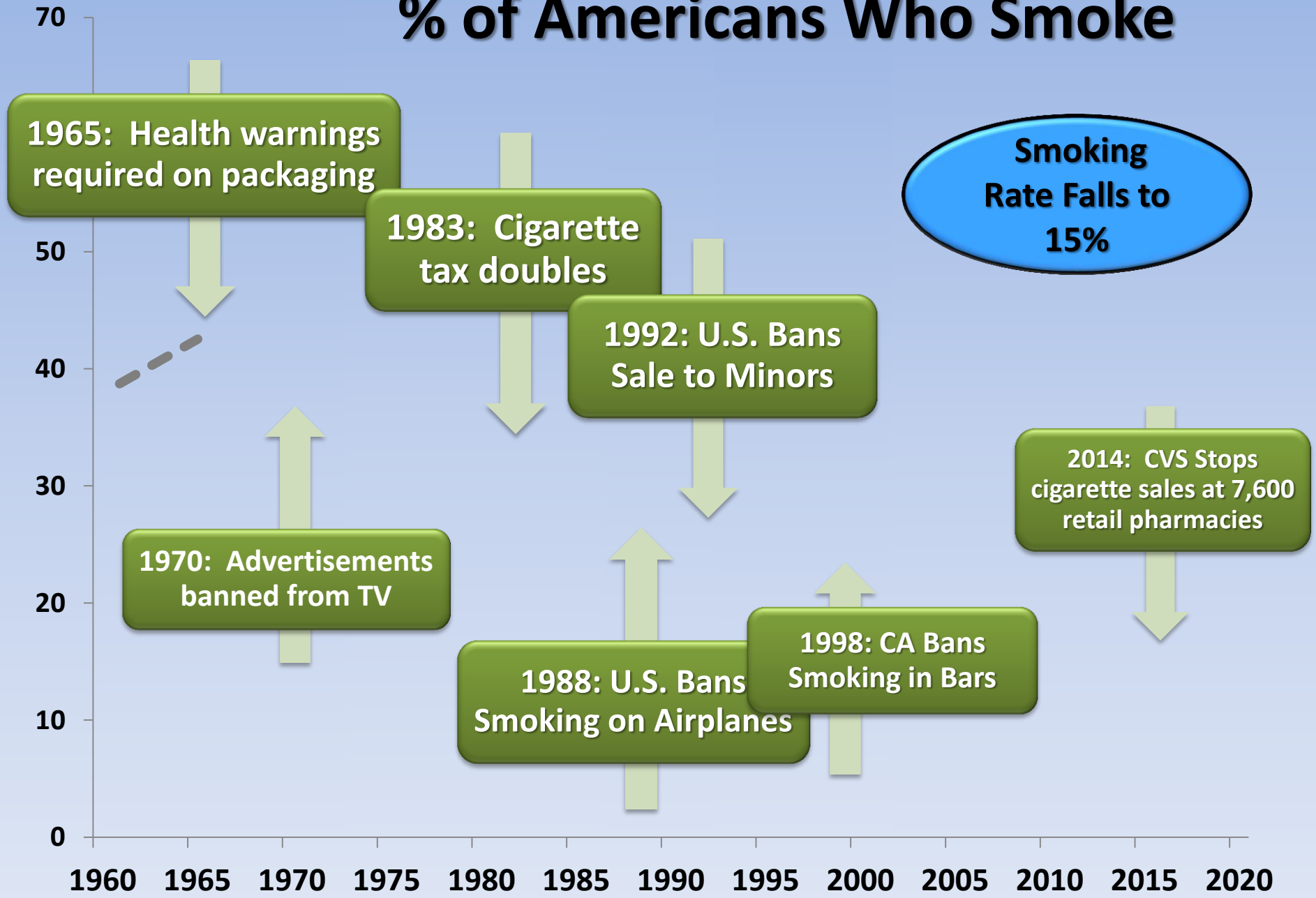


Source: NASA Ozone Hole Watch, 2014
http://ozonewatch.gsfc.nasa.gov/monthly/SH.html

Smoking in the US



% of Americans Who Smoke



Source: Centers for Disease Control and Prevention (CDC), 2014
http://www.cdc.gov/tobacco/data_statistics/tables/trends/cig_smoking/index.htm

Thank you

David Hochschild
California Energy Commission
David.hochschild@energy.ca.gov